Lecture 3: Competitive Equilibrium

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Continue with two period endowment framework
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- Before we took real interest rate as given
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Now we determine real interest rate
Fundamentally, the real rate of return measures the relative price of consumption today and tomorrow.
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Real Rate of Return as a Price

- Fundamentally, the real rate of return measures the relative price of consumption today and tomorrow.
- In micro, prices adjust to “clear” markets in equilibrium.
- That’s exactly the role that the real interest rate is going to play here.
Definition:

A competitive equilibrium is a set of allocations and prices such that:
1. All agents are behaving optimally.

What are the allocations for which we're solving? What are the prices? What does it mean for agents to be behaving optimally? What does it mean for markets to clear?
Definition:

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**Optimal behavior:** Euler equation holds

- **Demand:** consumption function, which is derived from optimal behavior (the Euler equation)
- **Supply:** exogenously given endowment pattern

Solve for the price where demand=supply, and compute the allocations.
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Suppose the economy is populated by $N$ identical households.
Example

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IBC is standard
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• Walras’ Law: if there are \( S \) total markets, and \( S - 1 \) markets clear, then the last market also clears
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Equilibrium allocations for everyone: $c = y$, $c' = y'$. Equilibrium price: $1 + r = \frac{y'}{y}$
Demand/supply interpretation
Graphical Interpretation

- Demand/supply interpretation
- Two ways to think about it – demand/supply of goods or demand/supply of savings. Either fine
Change $y$ and $y'$
Comparative Statics

- Change $y$ and $y'$
- How do allocations and prices change?
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- Change $y$ and $y'$
- How do allocations and prices change?
- Intuition
Suppose now there are two types of households, $A$ and $B$. $N_A$ and $N_B$ of each type
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Same preferences, but different endowment patterns:

\[
(y_A, y'_A) = (1, 0) \\
(y_B, y'_B) = (0, 1)
\]
Adding a government to this framework is straightforward.